

## **DIGITAL PRESSURE GAUGE**

### **Field of the invention**

The present invention relates to a digital pressure gauge, especially to a digital pressure gauge with prompting and/or warming functions.

### **5 Background of the invention**

According to the regulation of U.S. code for standard pressure gauge (ANSI-SP9), the commercially available digital pressure gauge requires calibration after 10,000 times of operation to ensure the accuracy thereof.

Moreover, according to the regulation of European code (EN1060-3: 1997  
10 code 9.2a), the digital pressure gauge requires calibration after 2 years of operation to ensure the accuracy thereof.

However, the current digital pressure gauge is generally provided<sup>7</sup> function of detecting operation times and duration. Therefore, the users have not sufficient information for their digital pressure gauges and the accuracy of the  
15 digital pressure gauge cannot be ensured.

### **Summary of the invention**

It is the object of the present invention to provide a digital pressure gauge with prompting and/or warming functions, whereby the user is informed after the digital pressure gauge is used with excessive times and/or duration for  
20 calibration.

To achieve above object, the present invention provides a digital pressure gauge, which comprises a power supply, an input button unit, a pressure sensor, a display unit, a warming unit, and a control unit. The control unit counts an operation times and/or operation duration of the digital pressure gauge and

generates alarm through the display unit and the warming unit when the counted operation times and/or operation duration of the digital pressure gauge exceeds a threshold.

The various objects and advantages of the present invention will be more readily understood from the following detailed description when read in conjunction with the appended drawing, in which:

**Brief description of drawing:**

Fig. 1 shows a block diagram of the present invention;

Fig. 2 shows a circuit diagram of the present invention; and

Fig. 3 shows a control flowchart of the digital pressure gauge after manufacture.

**Detailed description of the invention**

With reference now to Figs. 1 and 2, the present invention is intended to provide a digital pressure gauge with prompting and/or warming functions. The digital pressure gauge according to a preferred embodiment of the present invention comprises a power supply 1, a pressure sensor 2, an input button unit 3, a display unit 4, a warming unit 5 and a control unit 6.

The power supply 1 is composed of a voltage-regulating IC U1, capacitors C33-C35 and a battery BT1 and is functioned to supply voltage to the components connected thereto.

The pressure sensor 2 is composed of ICs U3A-U3D, U8, resistors R22, R23, R34, R35 and capacitors C14, C15 etc. The pressure sensor 2 is used to generate a signal in response to a sensed pressure. In the preferred embodiment of the present invention, the pressure sensor 2 is used to sense blood pressure in

vessel.

The input button unit 3 is composed of a switch SW, a resistor R9 and a capacitor C10 and is used to operate the digital pressure gauge.

5 The display unit 4 is composed of a liquid crystal display (LCD), and resistors R5-R7, and is functioned to display sensed pressure and warming message.

10 The warming unit 5 is composed of a transistor Q5, resistors R18, R24, R25, beeper Bz and light emitting diode (LED) etc. The warming unit 5 is activated by the control unit 6 to enable the beeper Bz or the light emitting diode (LED).

15 The control unit 6 is composed of a microprocessor U5, a memory U6, transistors Q3, Q4, Q5 and Q7, and crystal Y2. The control unit 6 is connected to the power supply 1, the pressure sensor 2, the input button unit 3, the display unit 4, and the warming unit 5. Moreover, the control unit 6 counts the operation times and/or operation duration of the digital pressure gauge and compares the counted operation times and/or operation duration of the digital pressure gauge with respect to a threshold value. The threshold value is predetermined before selling and can be modified by user such as a nurse.

20 When the control unit 6 detects that the operation times and/or operation duration of the digital pressure gauge exceeds predetermined threshold, the control unit 6 drives the beeper Bz of the warming unit 5, or drives the LED, or drives the LCD for warming user.

Fig. 3 shows the control flowchart of the digital pressure gauge after manufacture. At a step 31, the whole screen of the LCD is driven to flash. At a

step 32, the counter is reset to zero. At a step 33, the sensed pressure is displayed. At a step 34, the count is increased by one. At a step 35, the control unit 6 determined whether a threshold is reached? If false, the procedure is returned to step 33, else at a step 36, an alarm is generated to prompt and/or warm user.

To sum up, the digital pressure gauge with prompting and/or warming functions according to the present invention can comply the regulation codes in U.S. or in European and an alarm is generated to prompt and/or warm user for calibration. Therefore, the accuracy of the digital pressure gauge can be ensured.

Although the present invention has been described with reference to the preferred embodiment thereof, it will be understood that the invention is not limited to the details thereof. Various substitutions and modifications have suggested in the foregoing description, and other will occur to those of ordinary skill in the art. For example, the threshold can be modified at user's disposal. The warming unit can warm user by sound, lighting, vibration or the combination thereof. Therefore, all such substitutions and modifications are intended to be embraced within the scope of the invention as defined in the appended claims.